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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/051,498	01/18/2002	Paul Durrant	5681-09500	1589

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B. Noel Kivlin  
Conley, Rose, & Tayon, P.C.  
P.O. Box 398  
Austin, TX 78767

EXAMINER

BRAGDON, REGINALD GLENWOOD

ART UNIT PAPER NUMBER

2185

DATE MAILED: 12/09/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/051,498

Applicant(s)

DURRANT ET AL.

Examiner

Reginald G. Bragdon

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-19 and 21-32 is/are pending in the application.  
4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1, 4, 6-13, 16, 18, 19, 21, 24 and 26-32 is/are rejected.
- 7) ☒ Claim(s) 2, 3, 5, 14, 15, 17, 22, 23 and 25 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 30 July 2002 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_.

## **DETAILED ACTION**

### ***Priority***

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

### ***Information Disclosure Statement***

2. The Information Disclosure Statements received 30 July 2002, 10 October 2003, and 03 December 2004 have been considered. Please see the attached PTO-1449(s).

### ***Drawings***

3. Figures 1-3 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g).
4. Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

***Specification***

5. The abstract of the disclosure is objected to because the abstract is greater than 150 words. Correction is required. See MPEP § 608.01(b).
6. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

***Claim Objections***

7. Claims 8, 10-11, 13-19 and 21-31 are objected to because of the following informalities:

As per claims 8 and 28, line 2, “the second” should be --a second-- since no “second storage” has been set forth previously.

As per claim 13, line 4, --:-- should be added after “executable”.

As per claim 13, line 5, --the snapshot-- should be --a snapshot--.

As per claim 13, line 6, --the first storage-- should be --a first storage--.

As per claim 13, line 9, --to copy-- should be --copying--.

As per claim 13, line 10, --to record-- should be --recording--.

As per claim 13, line 12, --to copy-- should be --copying--.

As per claim 21, line 3, “he” should be --the--.

As per claim 21, line 5, --to;-- should be added after “snapshot”.

All dependent claims are objected to as having the same deficiencies as the claims they depend from.

Appropriate correction is required.

***Claim Rejections - 35 USC § 102***

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

9. Claims 1, 4, 6-9, 13, 16, 18-19, 21, 24, 26-27 and 32 are rejected under 35 U.S.C. 102(b) as being anticipated by Cavallo et al. (WO 97/24667).

As per claims 1, 13, and 21, Cavallo et al. teaches back-up logic/firmware (“method”, “program instructions” and “snapshot generator”) which generates a snapshot of DASD (“first storage”) data. With reference to figures 2A-2B, at step 210, the logic reads the lowest addressed block at the lowest ordered logical disk to be included in the backup. See page 7, lines 26-29. At step 220, the logic marks an entry in a data structure stored in the controller memory, indicating that the block has been backed-up (“recording in a copy map a copied indication for each copied block”). See page 8, lines 3-4. At step 230, the back-up logic writes the stored block to the backup media in backup device 20 (“on initiating the snapshot, initially copying to snapshot storage the content of a portion of the first storage that includes at least one block” and “snapshot storage”). See page 8, lines 4-6.

At step 245, it is determined whether there are any writes to the DASD 15 that are target blocks that have not been backup up (“in response to any write request to a block for which no copied indication has been recorded in the copy map”). See page 8, lines 18-19. If a write has been received for a block that has not been backed up yet (step 250), the block that is the target of the request is read from the DASD (step 275), the bitmap is marked to indicate that the block

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has been backed up in step 280, and the block is written to the backup media in step 285 (“copying to the snapshot storage the content of the block, prior to writing to it, and recording in the copy map a copied indication for the copied block”). See page 9, lines 8-13.

Cavallo et al. teaches sequentially backing up blocks (if the block hasn’t already been backed up), and continuing this process until all blocks have been backed up (“successively copying to the snapshot storage the content of other blocks for which no copied indication has been recorded in the copy map and recording in the copy map a copied indication for each copied block, until the content of the plurality of blocks have been copied to the snapshot storage”). See steps 255, 260, 265, 220, 230, and 240, and the corresponding discussion concerning these steps on pages 8-9.

As per claims 4, 16, and 24, Cavallo et al. teaches storing the copy map in the controller memory, which is separate from the DASD on which the data to be backed up is stored. See page 8, lines 3-4.

As per claims 6, 18, and 26, Cavallo et al. teaches storing the backup indication in a bitmap (“the copy map contains an indicator bit for each block of the first storage”). See page 8, line 6.

As per claims 7 and 27, Cavallo et al. teaches “marking” (“is set to form a copied indication”) the bitmap. See page 8, lines 6-7.

As per claims 8 and 28, Cavallo et al. teaches DASDs 15, 31, and 36 (collectively representing “a memory”). DASD 15 represents the claimed “first storage” and DASD 31 would represent a “second storage”.

As per claims 9 and 29, Cavallo et al. teaches that DASD 15 is the storage device that is backed up ("first storage") and that backup device 20 includes media to back up DASD 15. Device 20 is separate from the DASD 15. See page 5, lines 9-10.

As per claims 12, 19, and 32 Cavallo et al. teaches performing backup processing by the central control device 40. See page 5, lines 13-14. Since this device is separate from the host computer 10, the backup processing occurs in the "background" relative to the operations of the host computer.

### ***Claim Rejections - 35 USC § 103***

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

11. Claims 10-11 and 30-31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cavallo et al. in view of Takewaki (5,644,701).

As per claims 10 and 30, Cavallo et al. does not teach that the memory that is backed up may be a main memory of the host processor. Takewaki teaches creating a snapshot copy of a main memory of a computer system. See column 1, lines 20-23. It would have been obvious to one of ordinary skill in the art to have modified Cavallo et al. to create a snapshot copy of the main memory, because Takewaki et al. teaches that creating a snapshot copy of the main memory would allow recreation of the condition of a program at a certain point in time (column 1, lines 19-20), thereby improving fault tolerance.

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As per claims 11 and 31, Takewaki teaches that the “units” of main memory for which a snapshot is created are pages of memory. See column 3, lines 57-58.

***Allowable Subject Matter***

12. Claims 2-3, 5, 14-15, 17, 22-23, and 25 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

***Conclusion***

13. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Karmangau (6,434,681), Kedem (6,076,148), and Kopper (5,535,381) teach creating snapshot copies using a bit-map.

14. Any response to this action should be mailed to:

Commissioner of Patents and Trademarks  
Washington, D.C. 20231

All “OFFICIAL” patent application related correspondence transmitted by FAX must be directed to the central FAX number at **(571) 273-8300**:

“INFORMAL” or “DRAFT” FAX communications may be sent to the Examiner at **(571) 273-4204**, only after approval by the Examiner.

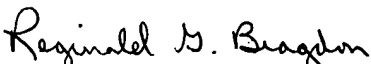


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15. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Reginald G. Bragdon whose telephone number is (571) 272-4204. The examiner can normally be reached on Monday-Thursday from 7:00 AM to 4:30 PM and every other Friday from 7:00 AM to 3:30 PM.

The examiner's supervisor, Mano Padmanabhan, can be reached at (571) 272-4210.

RGB  
December 6, 2005

  
Reginald G. Bragdon  
Primary Patent Examiner  
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